

ABSTRACT

A method for forming a non-iterative time-domain equalizer (TEQ) and apparatus corresponding thereto. A channel response $H(z)$ is followed by a TEQ response $A(z)$ and a residual output $B(z)$ is chosen so that its degree is less than a cyclic prefix. An error signal is formed so that $E(z) = H(z)A(z) - B(z)$. With a unit input, the error signal is set to zero and $B(z) = H(z)A(z)$. Each signal is expressed as a polynomial, having varying degrees, and a having corresponding coefficients. Once expanded, the coefficients of similar degree can be equated on both sides of the equation. The error signal can then be determined in terms of coefficients corresponding to the TEQ and the residual signal. The coefficients of the channel response can be derived from the channel training estimates. The error signal is minimized and the result is solved for in terms of the desired TEQ coefficients.